

In the Claims

Claims 1-9 (canceled).

Claim 10 (withdrawn, previously presented): The method of claim 87 wherein:

the first metal is hafnium,

the second metal is aluminum,

M₁ is tetrakis-methylethylamido hafnium (TMEAH), and

M₂ is trimethyl aluminum (TMA).

Claim 11 (withdrawn, previously presented): The method of claim 87 wherein:

the first metal is hafnium,

the second metal is aluminum,

M₁ is tetrakis-dimethylamino hafnium (TDMAH), and

M₂ is trimethyl aluminum (TMA).

Claim 12 (previously presented): The method of claim 87 wherein:

the first metal is aluminum,

the second metal is hafnium,

M₁ is trimethyl aluminum (TMA), and

M₂ is tetrakis-methylethylamido hafnium (TMEAH).

Claim 13 (previously presented): The method of claim 87 wherein:

the first metal is aluminum,

the second metal is hafnium,

M₁ is trimethyl aluminum (TMA), and

M₂ is tetrakis-dimethylamino hafnium (TDMAH).

Claim 14 (previously presented): A method of forming a material over a substrate comprising utilization of at least one iteration an ALD-type pulse sequence of M₁-M₂-R, where M₁ is a first metal-containing precursor comprising a first metal, M₂ is a second metal-containing precursor comprising a second metal different from the first metal, and R is a reactant which reacts with one or both of the first and second metals; and wherein:

the first metal is aluminum,

the second metal is hafnium,

R is ozone (O₃),

M₁ is trimethyl aluminum (TMA),

M₂ is tetrakis-methylethylamido hafnium (TMEAH), and

the pulse sequence is TMA-(TMEAH-O₃)_x, where x is an integer greater than or equal to two.

Claim 15 (previously presented): A method of forming a material over a substrate comprising utilization of at least one iteration an ALD-type pulse sequence of M_1 - M_2 -R, where M_1 is a first metal-containing precursor comprising a first metal, M_2 is a second metal-containing precursor comprising a second metal different from the first metal, and R is a reactant which reacts with one or both of the first and second metals; and wherein:

the first metal is aluminum,

the second metal is hafnium,

R is ozone (O_3),

M_1 is trimethyl aluminum (TMA),

M_2 is tetrakis-dimethylamino hafnium (TDMAH), and

the pulse sequence is $TMA-(TDMAH-O_3)_x$, where x is an integer greater than or equal to two.

Claims 16-19 (canceled).

Claim 20 (Currently amended): A method of forming a material over a substrate, comprising:

placing the substrate within a reaction chamber and, while the substrate is within the chamber, performing at least one iteration of the following sequence:

providing a first precursor within the reaction chamber and chemisorbing a first species from the first precursor onto the substrate;

removing substantially all of the first precursor from within the reaction chamber;

providing a second precursor within the reaction chamber and sorbing a second species from the second precursor in contact with the first species, the second precursor having a different composition than the first precursor; wherein one of the first and second species comprises hafnium and the other of the first and second species comprises aluminum; wherein one of the first and second precursors comprises one or both of tetrakis-methylethylamido hafnium (TMEAH) and tetrakis-dimethylamino hafnium (TDMAH); and wherein another of the first and second precursors comprises trimethyl aluminum (TMA); the utilization of the TMA improving conformality of the chemisorbed first species relative to conformality that would occur in the absence of the TMA;

removing substantially all of the second precursor from within the reaction chamber;

providing a reactant comprising nitrogen or silicon within the reaction chamber and reacting said reactant with at least one of the first and second species; and

removing substantially all of the reactant from within the reaction chamber.

Claims 21-27 (canceled).

Claim 28 (previously presented): The method of claim 20 wherein the first precursor is trimethyl aluminum and the second precursor is tetrakis-methylethylamido hafnium.

Claims 29 and 30 (canceled).

Claim 31 (withdrawn): The method of claim 28 wherein the first species comprises aluminum, the second species comprises hafnium, the reactant comprises nitrogen, and the reacting forms aluminum nitride and hafnium nitride.

Claim 32 (canceled).

Claim 33 (withdrawn): The method of claim 28 wherein the first species comprises aluminum, the second species comprises hafnium, the reactant comprises silicon, and the reacting forms aluminum silicide and hafnium silicide.

Claims 34-86 (canceled).

Claim 87 (previously presented): A method of forming a hafnium-containing material over a substrate comprising utilization of at least one iteration an ALD-type pulse sequence of M_1 - M_2 -R, where M_1 is a first metal-containing precursor comprising a first metal, M_2 is a second metal-containing precursor comprising a second metal different from the first metal, and R is a reactant which reacts with one or both of the first and second metals; wherein one of the first and second metals is hafnium and another of the first and second metals is aluminum; wherein one of the first and second metal-containing precursors comprises one or both of tetrakis-methylethylamido hafnium (TMEAH) and tetrakis-dimethylamino hafnium (DMAH); and wherein another of the first and second metal-containing precursors comprises trimethyl aluminum (TMA); the utilization of the TMA improving conformality of the hafnium-containing material relative to conformality that would occur with an ALD-type process utilizing one or both of TMEAH and DMAH in the absence of the TMA.